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Remarks

Response is made to the Office Action mailed on July 6, 2006. By this response, we have cancelled claims 1-35 and 41-49 without prejudice or disclaimer, amended claim 36, and added new claim 50. We expressly reserve the right to continue prosecution of the cancelled claims (or claims similar thereto) in a companion application or in another format in the future. At present, however, claims 36-40 and 50 remain pending.

We have amended claim 36 to clarify the language deemed objectionable in the Office Action. This amendment merely serves to clarify the meaning of the previous language, however, and is not narrowing in scope. As a result, no legal equivalents that would otherwise be available are surrendered by this modification.

With regard to the prior art rejections, the Office Action requests clarifications between our claimed inventions and the combination of US Patents 5660697 (Kawashima) and 6486021 (Kim). Briefly, neither of these references, taken alone or in combination, describes at least our claimed elements of *depositing a tantalum oxide (Ta_2O_5) layer...in the form of columnar grains having gaps therebetween* and *depositing an inorganic layer by atomic layer deposition...[that is] is substantially conformal to the topography of the tantalum oxide layer to thereby form said barrier coating*. Indeed, both the Kawashima and Kim references relate to insulating dielectric layers used in microelectronic devices, and do not relate in any meaningful manner to the a barrier coating, as contemplated in our application.

Kawashima, for example, expressly describes an electroluminescent display that includes two insulating "films" (layers 3 and 5 in FIG. 1 of that reference) made up of grown columnar crystals. These films, however, clearly do not have gaps formed between the columns. Indeed, insertion of these columns into the insulating structure would dramatically alter the electrical effects of the layers in a manner that would make the layers less fit for deployment in an electroluminescent display (*see* col. 3, line 59 *et seq.*, which describes the dielectric constant of the insulating film as "significant").

The Kim reference similarly relates to a semiconductor device (in this case a DRAM memory cell) having a high K capacitor dielectric (*see* Title and Abstract). Although the reference does describe the use of tantalum oxide, it does so only in the context of a dielectric material used in a microelectronic capacitor. The reference clearly does not describe a layer of

tantalum oxide that is in the form of columnar grains with gaps formed therebetween; to the contrary, Kim only contemplates a single, continuous dielectric layer 128. Indeed, Kim provides absolutely no discussion of barrier coatings whatsoever, and therefore would not have any reason for disclosing the structures and techniques recited in our claims.

Even if the Kawashima and Kim references were somehow combined, then, even this hybrid would fail to disclose the tantalum oxide topography recited in independent claim 36. Moreover, we do not believe that even a person skilled in the art would have any incentive to combine the two references as suggested in the Office Action, since neither relates to barrier coatings and both references come from non-analogous fields (i.e. dielectric/insulating materials used in microelectronics). At the very least, the motivation of the combination that is set forth in the Office Action (to correct for leakage current problems) are utterly irrelevant in the world of barrier coatings. Indeed, the entire motivation for the combination set forth in the Office Action relates to the electrical performance of capacitors formed from the hybrid devices. This analysis will be expanded upon Appeal, if necessary.

For the reasons set forth above, we request reconsideration of the rejections contained in the Office Action and allowance of our Application. If a telephone call would expedite prosecution in any way, the Examiner is earnestly requested to contact the undersigned at 480.385.5060.

If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

Dated: 11/6, 2006

By: _____

Brett A. Carlson
Reg. No. 39.928
(480) 385-5060

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